

Loose Primary School Cracking Calculations Session 2 Multiplication and Division

Information Session For Parents
24.6.2016



Loose
Primary School

Welcome

Miss J Whitlock – Maths Leader

Session aims:

- To gain an insight into how multiplication and division is taught from Year R to Year 6 in school.
- To give ideas for supporting maths at home – making it fun!

Multiplication and Division

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent through varied and frequent practice with increasingly complex problems over time
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

What method would you use?

$$7 \times 4 =$$

$$3.4 \times 1000 =$$

$$17 \times 12 =$$

$$349 \times 278 =$$

$$36 \div 4 =$$

$$780 \div 100 =$$

$$745 \div 6 =$$

$$432 \div 15 =$$

Mental and written strategies

As pupils progress through the school it is vital that we develop their mental strategies as well as their ability to record using a written method.

Year R





In their first year at Loose, pupils will develop their awareness of number.

By the end of the year, the majority of pupils will be able to:

- Solve problems, including doubling, halving and sharing.



Year R - Multiplication

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.





GUIDANCE / MODELS AND IMAGES	KEY VOCABULARY
<p>The link between addition and multiplication can be introduced through doubling.</p> <p>If available, Numicon is used to visualise the repeated adding of the same number. These can then be drawn around or printed as a way of recording.</p> <p>Children begin with mostly pictorial representations:</p> <div data-bbox="73 486 508 579">  </div> <p>How many groups of 2 are there?</p> <p>Real life contexts and use of practical equipment to <u>count in repeated groups of the same size</u>:</p> <div data-bbox="79 743 681 851">  </div> <p>How many wheels are there altogether?</p> <div data-bbox="855 761 1474 875">  </div> <p>How much money do I have?</p> <div data-bbox="774 979 942 1079">  </div> <p>Count in twos; fives; tens both aloud and with objects</p> <p>Children are <u>given multiplication problems set in a real life context</u>. Children are encouraged to visualise the problem.</p> <p>How many fingers on two hands? How many sides on three triangles? How many legs on four ducks?</p> <p>Children are encouraged to read number sentences aloud in different ways "five times two makes ten" "ten is equal to five multiplied by two"</p>	<p>lots of</p> <p>groups of</p> <p>times</p> <p>multiply</p> <p>multiplied by</p> <p>multiple of</p> <p>once, twice, three times... ten times...</p> <p>...times as (big, long, wide... and so on)</p> <p>repeated addition</p> <p>double</p>

Year R – Division and fractions

Maths for young children should be meaningful. Where possible, concepts should be taught in the context of real life.

GUIDANCE / MODELS AND IMAGES	KEY VOCABULARY
<p>The ELG states that children solve problems, including doubling, halving and sharing.</p> <p>Children need to see and hear representations of division as both grouping and sharing.</p> <p>Division can be introduced through halving.</p> <p>Children begin with mostly pictorial representations linked to real life contexts:</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">  <p>Grouping model Mum has 6 socks. She grouped them into pairs – how many pairs did she make?</p> </div> <div>  <p>Sharing model I have 10 sweets. I want to share them with my friend. How many will we have each?</p> </div> </div> <p>Children have a go at recording the calculation that has been carried out.</p>	<p>halve</p> <p>share, share equally</p> <p>one each, two each, three each...</p> <p>group in pairs, threes...</p> <p>tens</p> <p>equal groups of</p> <p>divide</p> <p>divided by</p> <p>divided into</p> <p>left, left over</p>

FRACTIONS

GUIDANCE / MODELS AND IMAGES	KEY VOCABULARY
<p>Although not explicit in the Development Matters document, the sharing model is a useful way of introducing young children to fractions and calculating with fractions.</p> <p>Setting the problems in real life context and solving them with <u>concrete apparatus</u> will support children's understanding.</p> <p>"I have got 5 bones to share between my two dogs. How many bones will they get each?"</p> <div style="display: flex; align-items: center; justify-content: center; margin: 10px 0;">   </div> <div style="display: flex; align-items: center; justify-content: center; margin: 10px 0;">   </div> <p>Children have a go at recording the calculation that has been carried out.</p> <p>$2\frac{1}{2} + 2\frac{1}{2} = 5$</p>	<p>As division vocabulary plus:</p> <p>fraction</p> <p>half</p> <p>halves</p> <p>third</p> <p>thirds</p>

Years 1 and 2

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value.

By the end of year 2, pupils should be taught to:

- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Years 3 to 6

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations.

By the end of Year 6, pupils should be taught to:

- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
- perform mental calculations, including with mixed operations and large numbers
- identify common factors, common multiples and prime numbers
- use their knowledge of the order of operations to carry out calculations involving the four operations

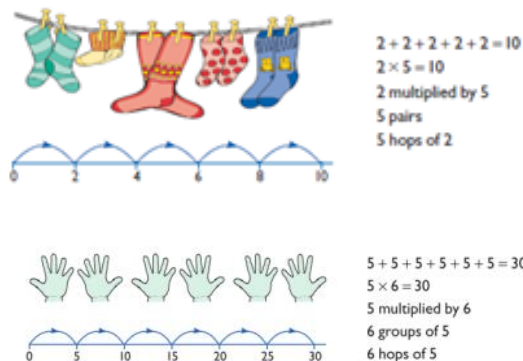
Multiplication

Progression in written methods

Year 1

Understand multiplication is related to doubling and combining groups of the same size (repeated addition)

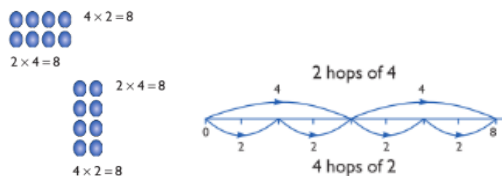
Washing line, and other practical resources for counting. Concrete objects. Numicon; bundles of straws, bead strings



Problem solving with concrete objects (including money and measures)

Use cuisenaire and bar method to develop the vocabulary relating to 'times' –
Pick up five, 4 times

Use arrays to understand multiplication can be done in any order (commutative)



Year 2

Expressing multiplication as a number sentence using x
Using understanding of the inverse and practical resources to solve missing number problems.

$$7 \times 2 = \square \quad \square = 2 \times 7$$

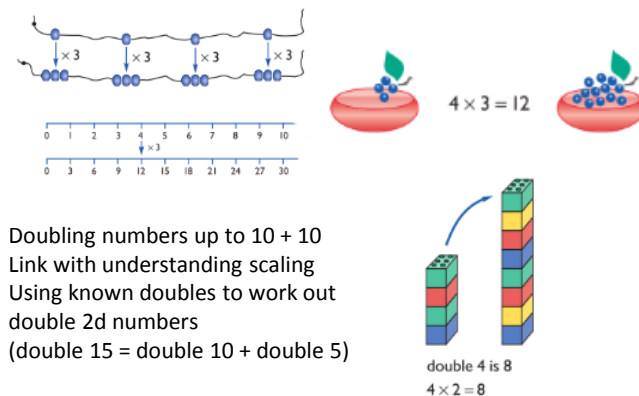
$$7 \times \square = 14 \quad 14 = \square \times 7$$

$$\square \times 2 = 14 \quad 14 = 2 \times \square$$

$$\square \times \bigcirc = 14 \quad 14 = \square \times \bigcirc$$

Develop understanding of multiplication using array and number lines (see Year 1). Include multiplications not in the 2, 5 or 10 times tables.

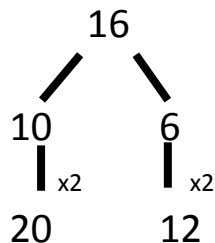
Begin to develop understanding of multiplication as scaling (3 times bigger/taller)



Doubling numbers up to $10 + 10$
Link with understanding scaling
Using known doubles to work out double 2d numbers
(double 15 = double 10 + double 5)

Towards written methods

Use jottings to develop an understanding of doubling two digit numbers.



Year 3

Missing number problems
Continue with a range of equations as in Year 2 but with appropriate numbers.

Mental methods

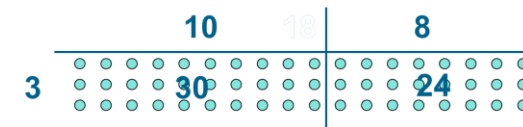
Doubling 2 digit numbers using partitioning

Demonstrating multiplication on a number line – jumping in larger groups of amounts

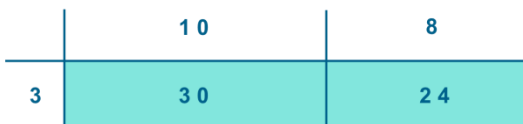
$$13 \times 4 = 10 \text{ groups } 4 + 3 \text{ groups of } 4$$

Written methods (progressing to 2d x 1d)

Developing written methods using understanding of visual images



Develop onto the grid method



Give children opportunities for children to explore this and deepen understanding using Dienes apparatus and place value counters

Year 4

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

$$\square 2 \times 5 = 160$$

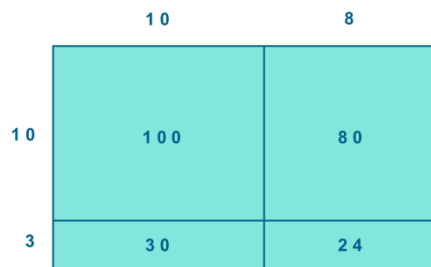
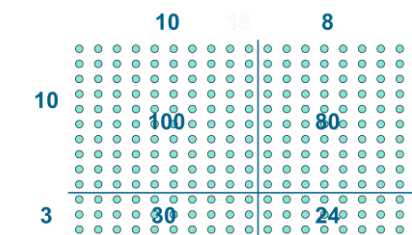
Mental methods

Counting in multiples of 6, 7, 9, 25 and 1000, and steps of 1/100.

Solving practical problems where children need to scale up. Relate to known number facts. (e.g. how tall would a 25cm sunflower be if it grew 6 times taller?)

Written methods (progressing to 3d x 2d)

Children to embed and deepen their understanding of the grid method to multiply up 2d x 2d. Ensure this is still linked back to their understanding of arrays and place value counters.



Year 5

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

Mental methods

X by 10, 100, 1000 using moving digits ITP

Use practical resources and jottings to explore equivalent statements (e.g. $4 \times 35 = 2 \times 2 \times 35$)

Recall of prime numbers up to 19 and identify prime numbers up to 100 (with reasoning)

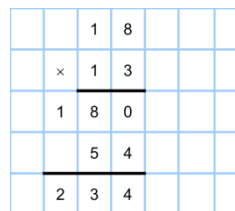
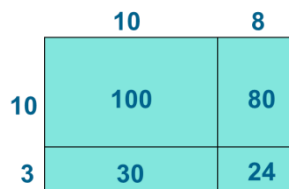
Solving practical problems where children need to scale up. Relate to known number facts.

Identify factor pairs for numbers

Written methods (progressing to 4d x 2d)

Long multiplication using place value counters

Children to explore how the grid method supports an understanding of long multiplication (for 2d x 2d)



Year 6

Continue with a range of equations as in Year 2 but with appropriate numbers. Also include equations with missing digits

Mental methods

Identifying common factors and multiples of given numbers

Solving practical problems where children need to scale up. Relate to known number facts.

Written methods

Continue to refine and deepen understanding of written methods including fluency for using long multiplication

X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

$$\begin{array}{r}
 2 3 1 \\
 1342 \\
 \times 18 \\
 \hline
 10736 \\
 13420 \\
 \hline
 24156 \\
 1
 \end{array}$$

Short multiplication

24 × 6 becomes

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \\ 2 \end{array}$$

Answer: 144

342 × 7 becomes

$$\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ 21 \end{array}$$

Answer: 2394

2741 × 6 becomes

$$\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ 42 \end{array}$$

Answer: 16 446

Long multiplication

24 × 16 becomes

$$\begin{array}{r} 24 \\ \times 16 \\ \hline 240 \\ 144 \\ \hline 384 \end{array}$$

Answer: 384

124 × 26 becomes

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ 11 \end{array}$$

Answer: 3224

124 × 26 becomes

$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ 11 \end{array}$$

Answer: 3224

Division

Progression in written methods

Year 1

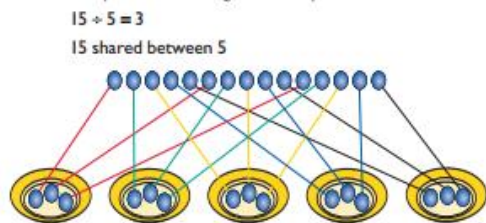
Children must have secure counting skills- being able to confidently count in 2s, 5s and 10s.

Children should be given opportunities to reason about what they notice in number patterns.

Group AND share small quantities- understanding the difference between the two concepts.

Sharing

Develops importance of one-to-one correspondence.



Children should be taught to share using concrete apparatus.

Grouping

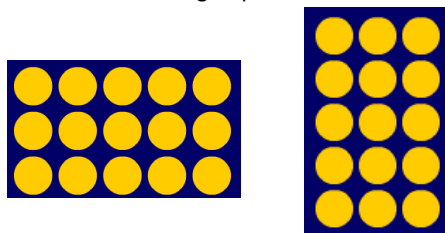
Children should apply their counting skills to develop some understanding of grouping.



Use of arrays as a pictorial representation for division.

$15 \div 3 = 5$ There are 5 groups of 3.

$15 \div 5 = 3$ There are 3 groups of 5.



Children should be able to find $\frac{1}{2}$ and $\frac{1}{4}$ and simple fractions of objects, numbers and quantities.

Year 2

\div = signs and missing numbers

$$6 \div 2 = \square \quad \square = 6 \div 2$$

$$6 \div \square = 3 \quad 3 = 6 \div \square$$

$$\square \div 2 = 3 \quad 3 = \square \div 2$$

$$\square \div \nabla = 3 \quad 3 = \square \div \nabla$$

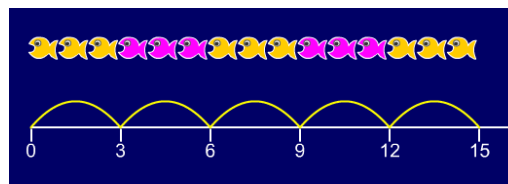
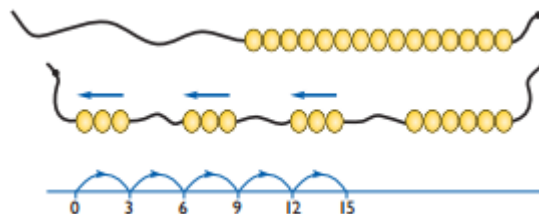
Know and understand sharing and grouping- introducing children to the \div sign.

Children should continue to use grouping and sharing for division using practical apparatus, arrays and pictorial representations.

Grouping using a numberline

Group from zero in jumps of the divisor to find our 'how many groups of 3 are there in 15?'

$$15 \div 3 = 5$$



Continue work on arrays. Support children to understand how multiplication and division are inverse. Look at an array – what do you see?

Year 3

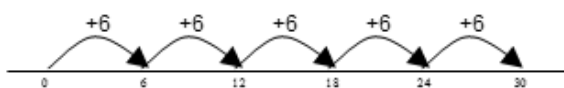
\div = signs and missing numbers

Continue using a range of equations as in year 2 but with appropriate numbers.

Grouping

How many 6's are in 30?

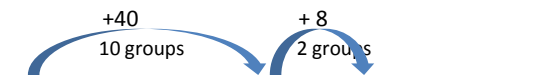
$30 \div 6$ can be modelled as:



Becoming more efficient using a numberline

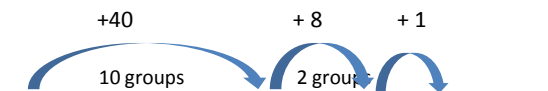
Children need to be able to partition the dividend in different ways.

$$48 \div 4 = 12$$



Remainders

$$49 \div 4 = 12 \text{ r}1$$



Sharing – 49 shared between 4. How many left over?

Grouping – How many 4s make 49. How many are left over?

Place value counters can be used to support children apply their knowledge of grouping.

For example:

$$60 \div 10 = \text{How many groups of 10 in 60?}$$

$$600 \div 100 = \text{How many groups of 100 in 600?}$$

Year 4

÷ = signs and missing numbers

Continue using a range of equations as in year 3 but with appropriate numbers.

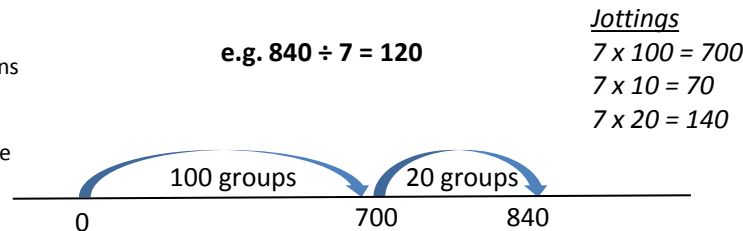
Sharing, Grouping and using a number line

Children will continue to explore division as sharing and grouping, and to represent calculations on a number line until they have a secure understanding. Children should progress in their use of written division calculations:

- Using tables facts with which they are fluent
- Experiencing a logical progression in the numbers they use, for example:
 1. Dividend just over 10x the divisor, e.g. $84 \div 7$
 2. Dividend just over 10x the divisor when the divisor is a teen number, e.g. $173 \div 15$ (learning sensible strategies for calculations such as $102 \div 17$)
 3. Dividend over 100x the divisor, e.g. $840 \div 7$
 4. Dividend over 20x the divisor, e.g. $168 \div 7$

All of the above stages should include calculations with remainders as well as without.

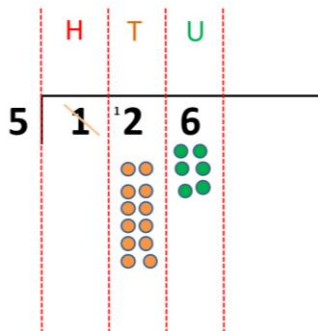
Remainders should be interpreted according to the context. (i.e. rounded up or down to relate to the answer to the problem)



Formal Written Methods

Formal short division should only be introduced once children have a good understanding of division, its links with multiplication and the idea of 'chunking up' to find a target number (see use of number lines above)

Short division to be modelled for understanding using place value counters as shown below. Calculations with 2 and 3-digit dividends. E.g. fig 1

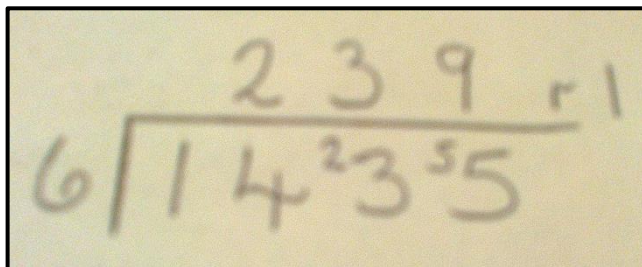


Year 5

Formal Written Methods

Continued as shown in Year 4, leading to the efficient use of a formal method. The language of grouping to be used (see link from fig. 1 in Year 4)

E.g. $1435 \div 6$



Children begin to practically develop their understanding of how express the remainder as a decimal or a fraction. Ensure practical understanding allows children to work through this (e.g. what could I do with this remaining 1? How could I share this between 6 as well?)

Year 6

÷ = signs and missing numbers

Continue using a range of equations but with appropriate numbers

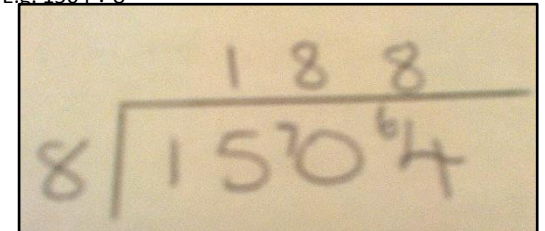
Sharing and Grouping and using a number line

Children will continue to explore division as sharing and grouping, and to represent calculations on a number line as appropriate.

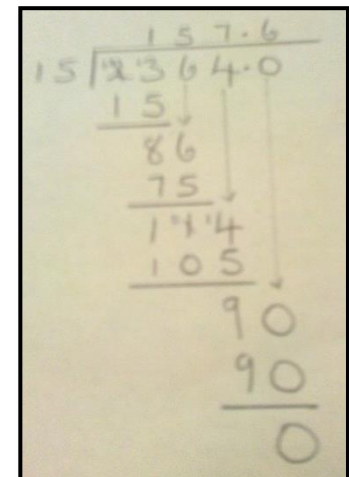
Quotients should be expressed as decimals and fractions

Formal Written Methods – long and short division

E.g. $1504 \div 8$



E.g. $2364 \div 15$



Short division

$98 \div 7$ becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \\ \underline{7} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

Answer: 14

$432 \div 5$ becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{) 432} \\ \underline{40} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

$496 \div 11$ becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{) 496} \\ \underline{44} \\ 56 \\ \underline{55} \\ 1 \end{array}$$

Answer: $45 \frac{1}{11}$

Long division

$432 \div 15$ becomes

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{30} \\ 132 \\ \underline{150} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28 remainder 12

$432 \div 15$ becomes

$$\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{30} \\ 132 \\ \underline{150} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

$15 \times 20 = 300$
 $15 \times 8 = 120$

$$\frac{12}{15} = \frac{4}{5}$$


Answer: $28 \frac{4}{5}$

$432 \div 15$ becomes

$$\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{30} \\ 132 \\ \underline{150} \\ 120 \\ \underline{120} \\ 0 \end{array}$$

Answer: 28.8

Mental methods - Multiplication

Multiplication		
Year 1	Year 2	Year 3
<p><u>Mental Strategies</u></p> <p>Children should experience regular counting on and back from different numbers in 1s and in multiples of 2, 5 and 10.</p> <p>Children should memorise and reason with numbers in 2, 5 and 10 times tables</p> <p>They should see ways to represent odd and even numbers. This will help them to understand the pattern in numbers.</p>  <p>Children should begin to understand multiplication as scaling in terms of double and half. (e.g. that tower of cubes is double the height of the other tower)</p> <p><u>Vocabulary</u></p> <p>Ones, groups, lots of, doubling</p> <p>repeated addition</p> <p>groups of, lots of, times, columns, rows</p> <p>longer, bigger, higher etc</p> <p>times as (big, long, wide ...etc)</p>	<p><u>Mental Strategies</u></p> <p>Children should count regularly, on and back, in steps of 2, 3, 5 and 10.</p> <p>Number lines should continue to be an important image to support thinking, for example</p> <p>Children should practise times table facts</p> <p>$2 \times 1 =$</p> <p>$2 \times 2 =$</p> <p>$2 \times 3 =$</p> <p>Use a clock face to support understanding of counting in 5s.</p> <p>Use money to support counting in 2s, 5s, 10s, 20s, 50s</p> <p><u>Vocabulary</u></p> <p>multiple, multiplication array, multiplication tables / facts</p> <p>groups of, lots of, times, columns, rows</p> <p><u>Generalisation</u></p> <p>Commutative law shown on array (video)</p> <p>Repeated addition can be shown mentally on a number line</p>	<p><u>Mental Strategies</u></p> <p>Children should continue to count regularly, on and back, now including multiples of 4, 8, 50, and 100, and steps of 1/10.</p> <p>The number line should continue to be used as an important image to support thinking, and the use of informal jottings and drawings to solve problems should be encouraged.</p> <p>Children should practise times table facts</p> <p>$3 \times 1 =$</p> <p>$3 \times 2 =$</p> <p>$3 \times 3 =$</p> <p><u>Vocabulary</u></p> <p>partition</p> <p>grid method</p> <p>inverse</p> <p><u>Generalisations</u></p> <p>Connecting x2, x4 and x8 through multiplication facts</p> <p>Comparing times tables with the same times tables which is ten times bigger. If $4 \times 3 = 12$, then we know $4 \times 30 = 120$. Use</p>

Year 4	Year 5	Year 6
<p><u>Mental Strategies</u></p> <p>Children should continue to count regularly, on and back, now including multiples of 6, 7, 9, 25 and 1000, and steps of 1/100.</p> <p>Become fluent and confident to recall all tables to x 12</p> <p>Use the context of a week and a calendar to support the 7 times table (e.g. how many days in 5 weeks?)</p> <p>Use of finger strategy for 9 times table.</p> <p>Multiply 3 numbers together</p> <p>The number line should continue to be used as an important image to support thinking, and the use of informal jottings should be encouraged.</p> <p>They should be encouraged to choose from a range of strategies:</p> <ul style="list-style-type: none"> - Partitioning using x10, x20 etc - Doubling to solve x2, x4, x8 - Recall of times tables - Use of commutativity of multiplication <p><u>Vocabulary</u></p> <p>Factor</p> <p><u>Generalisations</u></p> <p>Children given the opportunity to investigate numbers multiplied by 1 and 0.</p>	<p><u>Mental Strategies</u></p> <p>Children should continue to count regularly, on and back, now including steps of powers of 10.</p> <p>Multiply by 10, 100, 1000, including decimals (Moving Digits ITP)</p> <p>The number line should continue to be used as an important image to support thinking, and the use of informal jottings should be encouraged.</p> <p>They should be encouraged to choose from a range of strategies to solve problems mentally:</p> <ul style="list-style-type: none"> - Partitioning using x10, x20 etc - Doubling to solve x2, x4, x8 - Recall of times tables - Use of commutativity of multiplication <p>If children know the times table facts to 12 x 12. Can they use this to recite other times tables (e.g. the 13 times tables or the 24 times table)</p> <p><u>Vocabulary</u></p> <p>cube numbers</p> <p>prime numbers</p> <p>square numbers</p> <p>common factors</p> <p>prime number, prime factors</p> <p>composite numbers</p>	<p><u>Mental Strategies</u></p> <p>Consolidate previous years.</p> <p>Children should experiment with order of operations, investigating the effect of positioning the brackets in different places, e.g. $20 - 5 \times 3 = 5$; $(20 - 5) \times 3 = 45$</p> <p>They should be encouraged to choose from a range of strategies to solve problems mentally:</p> <ul style="list-style-type: none"> - Partitioning using x10, x20 etc - Doubling to solve x2, x4, x8 - Recall of times tables - Use of commutativity of multiplication <p>If children know the times table facts to 12 x 12. Can they use this to recite other times tables (e.g. the 13 times tables or the 24 times table)</p> <p><u>Vocabulary</u></p> <p>See previous years</p> <p>common factor</p> <p><u>Generalisations</u></p> <p>Order of operations: brackets first, then multiplication and division (left to right) before addition and subtraction (left to right). Children could learn an acrostic such as PEMDAS, or could be encouraged to design their own ways of remembering.</p>

Mental methods - Division

Division

Year 1

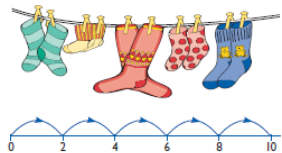
Year 2

Year 3

Mental Strategies

Children should experience [regular counting](#) on and back from different numbers in 1s and in multiples of 2, 5 and 10.

They should begin to recognise the number of groups counted to support understanding of relationship between multiplication and division.



$2 + 2 + 2 + 2 + 2 = 10$
 $2 \times 5 = 10$
 2 multiplied by 5
 5 pairs
 5 hops of 2

Children should begin to understand division as both sharing and grouping.

Sharing – 6 sweets are shared between 2 people. How many do they have each?



Grouping-

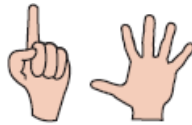
How many 2's are in 6?



Mental Strategies

Children should count regularly, on and back, in steps of 2, 3, 5 and 10.

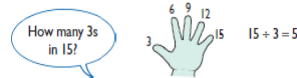
Children who are able to count in twos, threes, fives and tens can use this knowledge to work out other facts such as 2×6 , 5×4 , 10×9 . Show the children how to hold out their fingers and count, touching each finger in turn. So for 2×6 (six twos), hold up 6 fingers:



Touching the fingers in turn is a means of keeping track of how far the children have gone in creating a sequence of numbers. The physical action can later be visualised without any actual movement.

This can then be used to support finding out 'How many 3's are in 18?' and children count along fingers in 3's therefore making link between multiplication and division.

Children should continue to develop understanding of division as sharing **and** grouping.



15 pencils shared between 3 pots, how many in each pot?

Mental Strategies

Children should count regularly, on and back, in steps of 3, 4 and 8. Children are encouraged to use what they know about known times table facts to work out other times tables.

This then helps them to make new connections (e.g. through doubling they make connections between the 2, 4 and 8 times tables).

Children will make use multiplication and division facts they know to make links with other facts.

$$3 \times 2 = 6, 6 \div 3 = 2, 2 = 6 \div 3$$

$$30 \times 2 = 60, 60 \div 3 = 20, 2 = 60 \div 30$$

They should be given opportunities to solve grouping and sharing problems practically (including where there is a remainder but the answer needs to be given as a whole number)

e.g. Pencils are sold in packs of 10. How many packs will I need to buy for 24 children?

Children should be given the opportunity to further develop understanding of division (sharing) to be used to find a fraction of a quantity or measure.

[Use children's intuition to support understanding of fractions as an answer to a sharing problem.](#)

3 apples shared between 4 people = $\frac{3}{4}$



Division

Year 4

Mental Strategies

Children should experience regular counting on and back from different numbers in multiples of 6, 7, 9, 25 and 1000.

Children should learn the multiplication facts to 12×12 .

Vocabulary

see years 1-3

divide, divided by, divisible by, divided into

share between, groups of

factor, factor pair, multiple

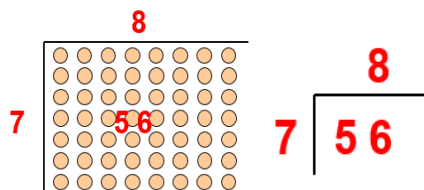
times as (big, long, wide ...etc)

equals, remainder, quotient, divisor

inverse

Towards a formal written method

Alongside pictorial representations and the use of models and images, children should progress onto short division using a bus stop method.



Year 5

Mental Strategies

Children should count regularly using a range of multiples, and powers of 10, 100 and 1000, building fluency.

Children should practice and apply the multiplication facts to 12×12 .

Vocabulary

see year 4

common factors

prime number, prime factors

composite numbers

short division

square number

cube number

inverse

power of

Generalisations

The = sign means equality. Take it in turn to change one side of this equation, using multiplication and division, e.g.

Start: $24 = 24$

Player 1: $4 \times 6 = 24$

Player 2: $4 \times 6 = 12 \times 2$

Year 6

Mental Strategies

Children should count regularly, building on previous work in previous years.

Children should practice and apply the multiplication facts to 12×12 .

Vocabulary

see years 4 and 5

Generalisations

Order of operations: brackets first, then multiplication and division (left to right) before addition and subtraction (left to right). Children could learn an acrostic such as PEMDAS, or could be encouraged to design their own ways of remembering.

Sometimes, always, never true questions about multiples and divisibility. E.g.: If a number is divisible by 3 and 4, it will also be divisible by 12. (also see year 4 and 5, and the hyperlink from the Y5 column)

Using what you know about [rules of divisibility](#), do you think 7919 is a prime number? Explain your answer.

Building on prior knowledge

$2 \times 3 =$	$6 \times 7 =$	$9 \times 8 =$
$2 \times 30 =$	$6 \times 70 =$	$9 \times 80 =$
$2 \times 300 =$	$6 \times 700 =$	$9 \times 800 =$
$20 \times 3 =$	$60 \times 7 =$	$90 \times 8 =$
$200 \times 3 =$	$600 \times 7 =$	$900 \times 8 =$

Moving on to solve problems such as:

$$360 \div \boxed{} = 60$$

How can you support at home?

The best thing that parents and carers can do for children is to have a positive attitude towards maths.

Take an interest in their learning and encourage them to be independent learners.

There is lots more helpful information and ideas for activities to play at home on our school website.



Any Questions?